NINTH YOUNG RESEARCHERS CONFERENCE
MATERIALS SCIENCES AND ENGINEERING

December 20-22, 2010, Belgrade, Serbia
Serbian Academy of Sciences and Arts, Knez Mihailova 35

Program and the Book of Abstracts

Materials Research Society of Serbia,
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III/9

Chitosan laminated collagen film properties

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The objective of this study was to determin physical, mechanical and barrier properties of chitosan laminated collagen film. Lamination of collagen with chitosan film increased collagen film thickness. Laminated film was more soluble in water then collagen film, but lamination did not affect swelling property of collagen film significantly. As to film color, lamination with chitosan reduced collagen film lightness (L) and yellowness (+b), but increased film redness (+a). Chitosan laminated collagen film did not show improved mechanical properties, but did show greatly improved oxigen barrier properties.

IV/1

Antibacterial activity of hydroxyapatite/silver nanocomposite

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Hydroxyapatite containing silver nanoparticles (HAp/Ag) was synthesized by homogeneous sonochemical metod. Morphology of obtained particles was formed of micrometer-sized rod-like HAp with nanosized silver sphere-like particles attached to their surface. So obtained material was tested for interaction with bacteria. For that purpose composites with three different contents of silver were prepared and their interactions with two different types of bacteria were studied. *Escherichia coli* was used as a representative of Gram negative while *Staphylococcus aureus* was applied as a representative of Gram positive bacteria. In the case of *E. coli* wider inhibition zone without presence of bacteria and with a layer of inactive bacteria near the surface of material was obtained. In this case obtained antibacterial effect was not concentration dependant. In the case of *S. aureus*, inhibition zone was narrower with the presence of modified bacteria in inhibition zone. Obtained antibacterial response pronounced dependence on concentration of silver within composite. According to results achieved with this investigation we concluded that HAp/Ag composite is effective against both, Gram positive and Gram negative bacteria and shows stronger activity against *E. coli*.